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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/725,756	11/30/2000	Hideyo Makino	199892US2	1614

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ART UNIT	PAPER NUMBER
2861	14

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Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application N .	Applicant(s)	
	09/725,756	MAKINO, HIDEYO	
<b>Period for Reply</b>	Examiner	Art Unit	
	Hai C Pham	2861	
<i>-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --</i>			
<b>A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.</b>			
<ul style="list-style-type: none"> <li>- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.</li> <li>- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.</li> <li>- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.</li> <li>- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).</li> <li>- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).</li> </ul>			
<b>Status</b>			
1) <input checked="" type="checkbox"/> Responsive to communication(s) filed on <u>15 November 2002</u> .			
2a) <input type="checkbox"/> This action is FINAL.                    2b) <input checked="" type="checkbox"/> This action is non-final.			
3) <input type="checkbox"/> Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under <i>Ex parte Quayle</i> , 1935 C.D. 11, 453 O.G. 213.			
<b>Disposition of Claims</b>			
4) <input checked="" type="checkbox"/> Claim(s) <u>2,6,8,9,22,26,28,29 and 41-44</u> is/are pending in the application.			
4a) Of the above claim(s) _____ is/are withdrawn from consideration.			
5) <input type="checkbox"/> Claim(s) _____ is/are allowed.			
6) <input checked="" type="checkbox"/> Claim(s) <u>2,6,8,9,22,26,28,29 and 41-44</u> is/are rejected.			
7) <input type="checkbox"/> Claim(s) _____ is/are objected to.			
8) <input type="checkbox"/> Claim(s) _____ are subject to restriction and/or election requirement.			
<b>Application Papers</b>			
9) <input type="checkbox"/> The specification is objected to by the Examiner.			
10) <input type="checkbox"/> The drawing(s) filed on _____ is/are: a) <input type="checkbox"/> accepted or b) <input type="checkbox"/> objected to by the Examiner. Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).			
11) <input type="checkbox"/> The proposed drawing correction filed on _____ is: a) <input type="checkbox"/> approved b) <input type="checkbox"/> disapproved by the Examiner. If approved, corrected drawings are required in reply to this Office action.			
12) <input type="checkbox"/> The oath or declaration is objected to by the Examiner.			
<b>Priority under 35 U.S.C. §§ 119 and 120</b>			
13) <input checked="" type="checkbox"/> Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).			
a) <input checked="" type="checkbox"/> All b) <input type="checkbox"/> Some * c) <input type="checkbox"/> None of: 1. <input checked="" type="checkbox"/> Certified copies of the priority documents have been received. 2. <input type="checkbox"/> Certified copies of the priority documents have been received in Application No. _____. 3. <input type="checkbox"/> Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)). * See the attached detailed Office action for a list of the certified copies not received.			
14) <input type="checkbox"/> Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application). a) <input type="checkbox"/> The translation of the foreign language provisional application has been received.			
15) <input type="checkbox"/> Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.			
<b>Attachment(s)</b>			
1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)		4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____	
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)		5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)	
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____		6) <input type="checkbox"/> Other: _____	

## DETAILED ACTION

### ***Claim Objections***

1. Claims 8, 9, 28, and 29 are objected to because of the following informalities:

#### Claim 8:

- Line 1, "according to claim 5" should read --according to claim 6-- since claim 5 has been cancelled by Amendment filed 11/15/02.

#### Claim 9:

- Line 4, "laser beam spots" should read --light emitting points-- per specification, page 15, beginning at line 16. However, the above amendment would put claim 9 in an improper dependent form since the limitation is an exact repetition of that being claimed in claim 6. Applicant is required to cancel the claim, or amend the claim to place the claim in proper dependent form, or rewrite the claim in independent form.

#### Claim 28:

- Line 1, "according to claim 25" should read --according to claim 26-- since claim 5 has been cancelled by Amendment filed 11/15/02.

#### Claim 29:

- Claim 29 objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. The limitation as recited in claim 29 is an exact repetition of that being claimed in

claim 26. Applicant is required to cancel the claim, or amend the claim to place the claim in proper dependent form, or rewrite the claim in independent form. Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 2, 6, 8, 9, 22, 26, 28, 29, 41-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakajima et al. (U.S. 5,999,345) in view of Iwasa et al. (U.S. 6,144,685).

Nakajima et al. discloses a multiple beam scanning apparatus comprising a plurality of semiconductor laser arrays as light sources (LD1, LD2, Fig. 6), each including a plurality of light emitting points in a single package, said plurality of light emitting points being formed to be positioned in linear relationship to one another and having an equidistant pitch so as to respectively emit laser beams simultaneously scanned over a recording substrate (photosensitive drum 407) and an adjusting means for adjusting a position of said plural semiconductor laser arrays so as to form a tilted angle (inclination angle  $\theta$ ) (Fig. 7), which is based on both the number of light emitting points or scanning lines ( $m$ ) and the dot density (recording density pitch  $P$ ) in the sub-scanning direction. Nakajima et al. further teaches the adjusting means rotating each of

the semiconductor laser arrays around a midpoint of a line connecting the centers of the light emitting points (around the rotational center C, Fig. 7).

Although Yamaguchi fails to explicitly disclose the claimed relation

$$\theta \leq \tan^{-1} \{1/(n-1)\}$$

Regardless, Iwasa et al. discloses a multibeam recording apparatus in which the laser source array is arranged such that the laser beam spots on the surface of the recording medium are aligned (inclined line M', Fig. 7A) in the sub-scanning direction, and are inclined with respect to the main scanning direction (base line N') to form an angle  $\theta'$  with the main scanning line. The disposition of the laser beam spots on the recording medium as well as the angle  $\theta'$  are image of the corresponding structure of the laser source array, and result from a predetermined magnification. Table 2 (col. 11) shows the parameters of the multibeam recording apparatus in its basic configuration, where:

$$m = 30 \quad (m \text{ is the number of laser beam spots in the sub-scanning direction})$$

$$\theta = \theta' = 88.1^\circ$$

The angle formed by the line drawn perpendicular to the primary (main) scanning direction and the line drawn through respective centers of the first to the m-th laser beam spots becomes:

$$90^\circ - \theta' = 90^\circ - 88.1^\circ = 1.8^\circ$$

and the value of

$$\tan^{-1} \{1/(m-1)\} = \tan^{-1} \{1/(30-1)\} = 1.97^\circ$$

Therefore,

$$90^\circ - \theta' \leq \tan^{-1} \{1/(m-1)\}$$

which amply satisfies the claimed inequality.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Nakajima et al. with the aforementioned teaching of Iwasa et al. for the purpose of adjusting the pitch of the scanning lines.

With regard to claims 8-9, 28-29, and 41-44, Nakajima et al. further teaches the first semiconductor laser array (LD1) having an optical axis of laser beams aligned to be parallel to and tilted by a relative minute angle ( $\theta_2-\theta_1$ ) from that of other laser arrays (LD2) so that a position of said laser beam spots on the recording substrate formed by the first laser array is adjusted to be displaced from that of beam spots from the other laser arrays by a predetermined distance along the primary scanning direction (Figs. 7, 8), and the number of light emitting points of each of the laser arrays being 4 (501-504, 511-514, Fig. 11).

### ***Response to Arguments***

4. Applicant's arguments with respect to claims 2, 6, 8, 9, 22, 26, 28, 29, 41-44 have been considered, and are traversed in view of the new grounds of rejection as stated above in this Office action.

***Contact information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai C Pham whose telephone number is (703) 308-1281. The examiner can normally be reached on T-F (8:30-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin R. Fuller can be reached on (703) 308-0079. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722, (703) 308-7724, (703) 308-7382, (703) 305-3431, (703) 305-3432 for regular communications and for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



HAI PHAM  
PRIMARY EXAMINER

January 22, 2003